

IN THE CLAIMS

Please cancel claims 6, 7 and 26 without prejudice or disclaimer as to its subject matter by this amendment, amend claim 1 and newly add claims 28-30 by this amendment as follows:

1. (Previously Amended) An electrical contacting apparatus in an ink jet printer, for contacting respective ones of a plurality of electrically conductive first contact portions of an ink cartridge with corresponding ones of a plurality of electrically conductive second contact portions of a printed circuit board permanently installed on a carrier, in order to electrically connect the ink cartridge to said printed circuit board, said ink cartridge being configured to be mounted on said carrier, said apparatus comprising:

a plurality of electrically conductive spring elastic members, each one of said plurality of electrically conductive spring elastic members on said printed circuit board comprising:

a third contact portion that forms electrical contact with a corresponding one of said plurality of said first contact portions of said ink cartridge;

a base having one end electrically connected to a corresponding one of said plurality of second contact portions; and

a connection portion electrically and physically connecting said third contact portion to said base, said connection portion providing an elastic restoration force between said third contact portion and said base, each one of said plurality of spring elastic members being formed from an integral elongated member having a bent portion, said bent portion forming said connection portion, said ink cartridge being removable

18 from said carrier to replace said ink cartridge during a life of said printer, said printed
19 circuit board being attached to said carrier and not to said ink cartridge when said ink
20 cartridge is removed from said carrier for replacement, said printed circuit board not
21 being removable from said carrier, said spring elastic members being permanently
22 attached to said printed circuit board, said spring elastic members not being in physical or
23 electrical contact with said first contact portions on said ink cartridge when said ink
24 cartridge is removed from said carrier when said ink cartridge is being replaced, said
25 spring elastic members being in electrical and physical contact with said first contact
26 portions of said ink cartridge only when said ink cartridge is installed on said carrier.

1 2. (Previously Amended) The apparatus of claim 1, further comprising a housing for
2 receiving said plurality of spring elastic members and maintaining said elastic force between each
3 one of a plurality of third contact portions and a corresponding one of a plurality of bases for
4 each spring elastic member.

1 3. (Previously Amended) The apparatus of claim 2, said housing having a plurality of
2 spaces for receiving respective ones of said plurality of spring elastic members and providing
3 electrical and physical isolation between adjacent spring elastic members, said housing
4 comprising a plurality of windows exposing respective ones of said plurality of spring elastic
5 members to the outside.

1 4. (Previously Thrice Amended) The apparatus of claim 1, wherein one end of each one
2 of a plurality of bases being electrically connected to the printed circuit board by solder to form
3 one of said plurality of second contacts.

DA
cont

1 5. (Previously Amended) The apparatus of claim 1, each one of said plurality of spring
2 elastic members being formed of phosphor bronze plated with nickel, and each one of said
3 plurality of third contact portions being further plated with gold.

1 6 - 7. (Canceled)

1 8. (Original) An ink-jet printer, comprising:
2 an ink cartridge comprising a plurality of electrical contacts;
3 a carrier for mounting said ink cartridge thereon;
4 a printed circuit board (PCB) disposed on a back side of said carrier;
5 a housing disposed on said PCB, said housing facing a front side of said carrier, said
6 housing having a plurality of openings facing said front side of said carrier; and
7 a plurality of spring elastic members disposed in said housing, each of said plurality of
8 spring elastic members being electrically conductive and having a first and a second end, said
9 first end being electrically connected to said PCB and a contacting portion of said elastic member
10 near said second end protruding through a corresponding one of said plurality of openings in said
11 housing and having an elastic force, each one of said plurality of elastic members capable of

12 forming electrical contact at said contacting portion with corresponding ones of said plurality of
13 electrical contacts of said ink cartridge when said ink cartridge is placed on said carrier.

DI
Cmb
2 9. (Original) The ink-jet printer of claim 8, wherein each one of said plurality of elastic
3 members comprising a connection portion disposed within said housing and disposed between
4 said first end and said contacting portion of said second end of said elastic member providing
elastic force to said contacting portion of said elastic member.

1 10. (Original) The ink-jet printer of claim 9, wherein each one of said plurality of elastic
2 members has an equal amount of elastic force as compared to other ones of said plurality of
3 elastic members.

1 11. (Original) The ink-jet printer of claim 9, wherein said connection portion of each of
2 said plurality of elastic members being substantially U-shaped.

1 12. (Original) The ink-jet printer of claim 8, wherein said first end of each of said
2 plurality of elastic members being electrically connected to said PCB by soldering.

1 13. (Original) The ink jet printer of claim 8, wherein each of said plurality of elastic
2 members is made of phosphor bronze plated with nickel, and the contacting portion of the spring
3 elastic member is further plated with gold.

1 14. (Original) The ink jet printer of claim 13, wherein the nickel is formed to a thickness
2 of 0.5 to 20 μm , and the gold is formed to a thickness of 0.1 μm or greater.

DI
CA71
2 15. (Original) The an ink jet printer of claim 14, wherein the nickel is formed to a
thickness of 1.27 μm , and the gold is formed to a thickness of 0.3 μm .

1 16.(Original) A method for producing a plurality of spring elastic members that provide
2 electrical contact between an ink cartridge and a printed circuit board (PCB) of an ink-jet printer,
3 comprising the steps of:

4 depositing phosphor bronze plated with nickel on said plurality of spring elastic
5 members;

6 plating a contacting portion of each of said plurality of spring elastic members with gold;

7 inserting said plurality of spring elastic members into a housing, wherein said contacting
8 portion of each of said plurality of spring elastic members protrudes through one of a plurality of
9 openings; and

10 soldering one end of each of said plurality of spring elastic members to said PCB.

1 17. (Original) The method of claim 16, wherein the nickel is formed to a thickness of 0.5
2 to 20 μm , and the gold is formed to a thickness of 0.1 μm or greater.

1 18. (Original) The method of claim 17, wherein the nickel is formed to a thickness of
2 1.27 μm , and the gold is formed to a thickness of 0.3 μm .

DA
ent
1 19. (Previously Amended) The apparatus of claim 1, wherein said bent portion
2 comprising only a single bend in each one of said plurality of elastic members, said bend
3 providing all of said elastic restoration force of each one of said plurality of elastic members.

1 20. (Previously Amended) The apparatus of claim 1, wherein each one of said elastic
2 members being absent of a coil spring, each one of said elastic members being absent a rigid
3 conductive member.

1 21. (Previously added) The apparatus of claim 1, said printed circuit board not being part
2 of said ink cartridge.

1 22. (Previously added) The apparatus of claim 1, said third contact portion being at a first
2 point on each of said electrically conductive spring elastic members, said base being at a second
3 point on each of said electrically conductive spring elastic members, said bent connection portion
4 being disposed on each electrically conductive spring elastic member between said first point and
5 said second point.

1 23. (Previously added) The apparatus of claim 1, said bent connection portion being

2 separate and different from said third contact portion.

1 24. (Previously added) The apparatus of claim 1, said third contact portion being a second
2 bent portion on each of said electrically conductive spring elastic members.

1 25. (Previously added) The apparatus of claim 21, said printed circuit board not serving to
2 enclose said ink cartridge.

1 26. (Canceled)

1 27. (Previously added) The apparatus of claim 1, said elastic restoration force serving to
2 push said third contact portion into stable and reliable physical and electrical contact with said
3 first contact portion of said ink cartridge when said ink cartridge is mounted on said carrier.

D1
Cant
1 28. (New) The apparatus of claim 1, said bent connection portion being a bend of at least
2 180 degrees in each spring elastic member.

1 29. (New) The apparatus of claim 2, said base and said connection portion of each spring
2 elastic member being disposed within said housing.

1 30. (New) The apparatus of claim 3, said base and said connection portion of each spring

²
DL
End

elastic member being disposed within respective spaces in said housing.
